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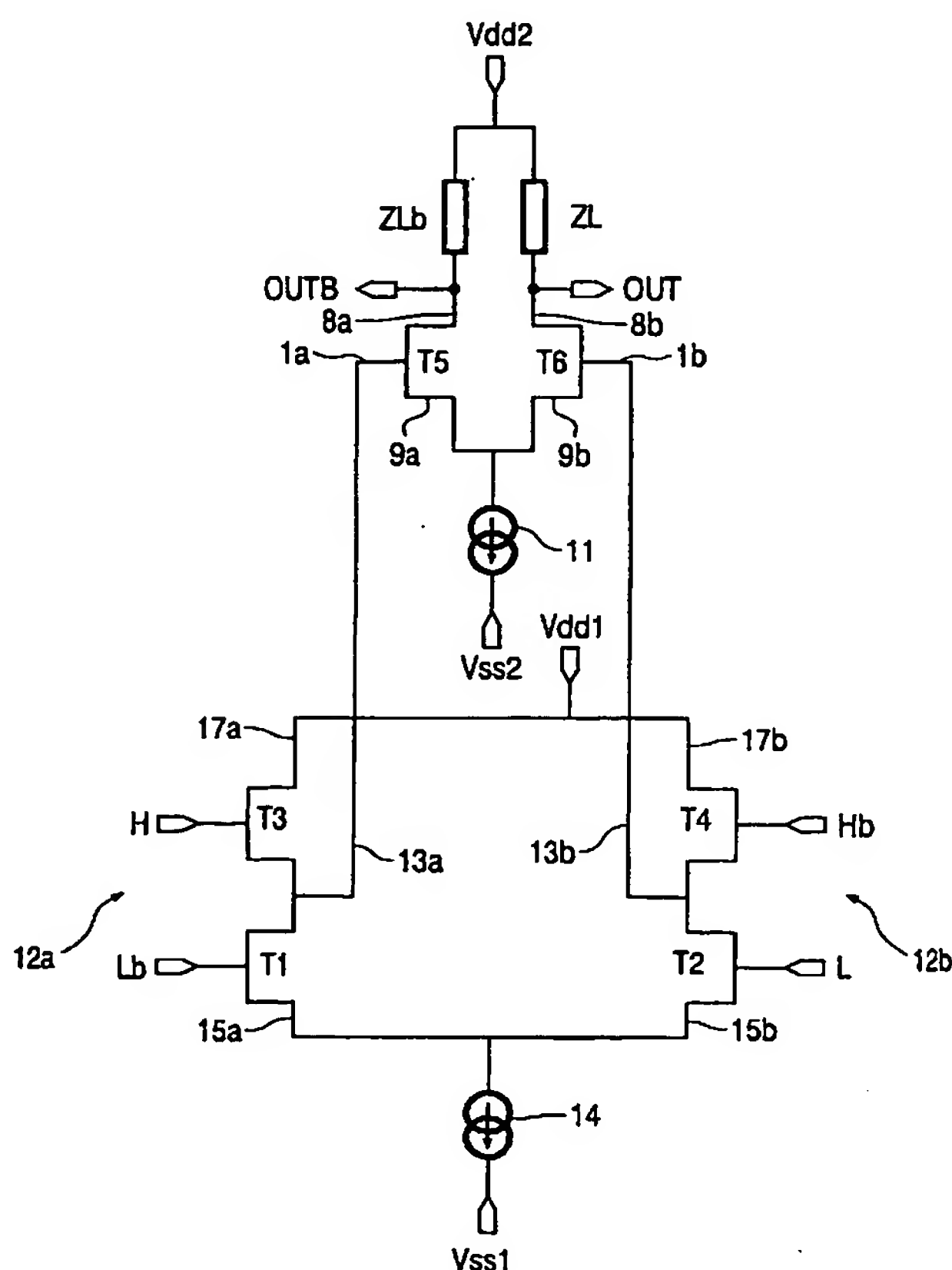
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(54) Title: DIFFERENTIAL AMPLIFIER CIRCUIT FOR REGENERATING COMPLEMENTARY DIGITAL SIGNALS



(57) Abstract: An amplifier circuit for regenerating complementary digital signals which comprises a differential pair of transistors (T5, T6). This circuit also comprises a pair of push-pull amplifiers (12a, 12b) which consists of a first and a second push-pull amplifier having a first and a second low input (L, Lb) which are coupled to a source for the input signal and its complement, respectively, a first and a second high input (H, Hb) which are coupled to a source of the complementary input signal and to a source of the input signal, respectively, a first and a second output (13a, 13b) which supply, under a low impedance and during switching, brief and intense current pulses of said complementary input signals of increased amplitude in order to apply these pulses to the first and second control inputs (1a, 1b) of the first and second transistors (T5, T6) of the differential pair, respectively.

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	RIISHOJ ET AL: "ABOVE 8GHZ STATIC T-FLIP-FLOP OPERATION USING FT=22.9GHZ GAAS MESFETS" PROCEEDINGS OF THE EUROPEAN MICROWAVE CONFERENCE. ESPOO, FINLAND, AUG. 24 - 27, 1992, TUNBRIDGE WELLS, MEP, GB, vol. 1 CONF. 22, 24 August 1992 (1992-08-24), pages 313-317, XP000337783 figure 3 --- -/--	1-9

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>LAO Z ET AL: "40-GB/S HIGH-POWER MODULATOR DRIVER IC FOR LIGHTWAVE COMMUNICATION SYSTEMS" IEEE JOURNAL OF SOLID-STATE CIRCUITS, IEEE INC. NEW YORK, US, vol. 33, no. 10, October 1998 (1998-10), pages 1520-1526, XP000854252 ISSN: 0018-9200 figures 4,5</p>	1-4,6-9
X	<p>--- NAGAVARAPU S ET AL: "A 1.0625 Gbps PECL Line Driver" CIRCUITS AND SYSTEMS, 1997. PROCEEDINGS OF THE 40TH MIDWEST SYMPOSIUM ON SACRAMENTO, CA, USA 3-6 AUG. 1997, NEW YORK, NY, USA, IEEE, US, 3 August 1997 (1997-08-03), pages 1158-1160, XP010272274 ISBN: 0-7803-3694-1 figure 2</p>	1
X	<p>--- PATENT ABSTRACTS OF JAPAN vol. 011, no. 312 (E-548), 12 October 1987 (1987-10-12) & JP 62 104312 A (NEC CORP), 14 May 1987 (1987-05-14) abstract; figure 1</p>	1
X	<p>--- US 2001/024137 A1 (MIURA KEIJI) 27 September 2001 (2001-09-27) paragraph '0004!; figures 4,5 -----</p>	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 62104312	A	14-05-1987	NONE	
US 2001024137	A1	27-09-2001	JP 3344404 B2	11-11-2002
			JP 2001257579 A	21-09-2001
			CA 2340516 A1	14-09-2001
			DE 10111999 A1	22-11-2001